

## REMARKS

Claims 1-35 and 39-41 remain pending in the application. No claims have been amended, cancelled or added by this amendment. Reconsideration and allowance of the above-identified application are respectfully requested in view of the comments set forth herein and the accompanying Declaration of Simon K. Hodson Under 37 U.S.C. § 1.131 (which has been revised relative to the first Declaration of Simon K. Hodson submitted previously in order to address alleged deficiencies raised in the most recent office action).

### **I. SUMMARY OF CURRENT ART REJECTIONS**

The Office Action rejects claims 1-12, 15-25, 27, 28 and 31-34 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, U.S. Patent No. 6,838,403 to Tsai et al. In response, and as will be discussed more fully below, the revised Declaration of Simon K. Hodson establishes an invention date for the foregoing claims that is prior to the filing date of Tsai et al. Because Tsai et al. is only recognizable as prior art, if at all, under 35 U.S.C. § 102(e), the patent and previously published application are not in fact prior art under 35 U.S.C. § 102(e) relative to claims 1-12, 15-25, 27, 28 and 31-34 since the subject matter of these claims predates the filing date of Tsai et al.

The Office Action rejects claims 1-12, 15, 24, 25, 27 and 28 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over, U.S. Publication No. 2002/0098341 to Schiffer et al. In response, and as will be discussed more fully below, the revised Declaration of Simon K. Hodson establishes an invention date for the foregoing claims that is prior to the filing date of Schiffer et al. Because Schiffer et al. is only recognizable as prior art, if at all, under 35 U.S.C. § 102(e), the published application and any later-issued patent are not in fact prior art under 35 U.S.C. § 102(e) relative to claims 1-12, 15, 24, 25, 27 and 28 since the subject matter of these claims predates the filing date of Schiffer et al.

The Office Action rejects claims 13, 14, 26, 29, 30, 35 and 39-41 under 35 U.S.C. § 103(a) as being unpatentable over Tsai et al. in view of U.S. Patent No. 6,096,809 to Lorcks et al. In response, and as will be discussed more fully below, the revised Declaration of Simon K. Hodson establishes an invention date for claims 13, 26, 29, 30 and 35 that is prior to the filing date of Tsai et al. Accordingly, claims 13, 26, 29, 30 and 35 cannot be rejected over the combination of Tsai et al. and Lorcks et al. On the other hand, neither Tsai et al. nor Lorcks et al. teach or suggest "thermoplastic starch that is free of plasticizers" as recited in claims 14 and

39-41. Nor does the Office Action even allege that they do. Therefore, claims 14 and 39-41 are not *prima facie* obvious over the combination of Tsai et al. and Lorcks et al.

The Office Action rejects claims 13, 14, 16-23, 26, 29-35 and 39-41 under 35 U.S.C. § 103(a) as being unpatentable over Schiffer et al. in view of Lorcks et al. In response, and as will be discussed more fully below, the revised Declaration of Simon K. Hodson establishes an invention date for claims 13, 16-23, 26 and 29-35 that is prior to the filing date of Schiffer et al. Accordingly, claims 13, 16-23, 26 and 29-35 cannot be rejected over the combination of Schiffer et al. and Lorcks et al. On the other hand, neither Schiffer et al. nor Lorcks et al. teach or suggest "thermoplastic starch that is free of plasticizers" as recited in claims 14 and 39-41. Nor does the Office Action even allege that they do. Therefore, claims 14 and 39-41 are not *prima facie* obvious over the combination of Schiffer et al. and Lorcks et al.

**II. THE REVISED DECLARATION OF SIMON K. HODSON UNDER 35 C.F.R. § 1.131 ESTABLISHES AN INVENTION DATE FOR AT LEAST CLAIMS 1-13 AND 15-35 THAT IS PRIOR TO THE FILING DATES OF TSAI ET AL. AND SCHIFFER ET AL.**

Filed concurrently herewith is the revised Declaration of Simon K. Hodson under 35 C.F.R. § 1.131 ("Hodson Declaration") and exhibits A-G thereto. The Office Action takes the position that the previous declaration of Simon K. Hodson was insufficient to establish a reduction to practice prior to the effective filing dates of Tsai et al. and Schiffer et al.:

The presently claimed subject matter is directed to articles of manufacture, i.e., sheets or films, having specific properties and characteristics, e.g., cavitation, texturing, dead fold, etc. The evidence, however, is related solely to wrap formulations comprising a blend of specific biodegradable polymers. There is no evidence establishing that said formulations possessed the presently claimed characteristics, e.g., cavitation, texturing, dead fold, etc. Accordingly, the evidence is insufficient to establish a reduction to practice.

Office Action, p. 4.

In response, the revised Hodson Declaration establishes that sheets or films having the claimed characteristics (e.g., cavitation, texturing, dead fold, etc.) were reduced to practice prior to the filing dates of Tsai et al. and Schiffer et al. Moreover, the previous declaration of Simon K. Hodson showed a reduction to practice of various claimed features, including texturing, dead fold, the use of stiff and soft biodegradable polymers, etc., by virtue of incorporating, as Exhibit

B, U.S. Patent No. 6,573,340 to Khemani et al. This patent issued from a patent application filed August 23, 2000 by the inventors and clearly shows that texturing, dead fold, the use of stiff and soft polymers, and other claimed concepts were clearly reduced to practice at least as early as August 23, 2000 (which is prior to the filing dates of both Tsai et al. and Schiffer et al.). Thus, Applicants traverse the statement in the Office Action regarding the failure of the previous declaration to establish a reduction to practice relative to various claimed features (*e.g.*, texturing and dead fold, to name two, both of which were clearly set forth in the application filed August 23, 2000). Such facts are brought forth in more detail in the revised Hodson Declaration, which will now be discussed in detail.

Embodiments of biodegradable food wraps comprising one or more biodegradable polymers and inorganic particulate fillers were conceived and reduced to practice at least as early as July 2, 2000, as evidenced by the electronic mail communication attached to the Hodson Declaration as Exhibit A ("July 2, 2000 e-mail"). Hodson Declaration, ¶ 6. The July 2, 2000 email indicates that Mr. Khemani had, at least as early as July 2, 2000, produced and tested blown sheets or films suitable for use as food wraps from various blends having the following general formula:

Biomax 6926	60-70%
Ecoflex F	5-20%
Biomax (unknown grade)	10-20%
Talc	5-10%
TiO <sub>2</sub>	5-10%

Hodson Declaration, ¶ 7. Biomax and Ecoflex are biodegradable polymers manufactured by DuPont and BASF, respectively; talc and TiO<sub>2</sub> (titanium dioxide) are inorganic particulate fillers added to give the food wraps the look, feel and dead-fold of paper rather than plastic. Hodson Declaration, ¶ 8.

The July 2, 2000 email indicates that biodegradable blends within the general formula of ¶ 7 of the Hodson Declaration had already been made at "Gemini" (*i.e.*, using a Gemini blowing apparatus, discussed below) and that Mr. Khemani was planning to "finish these tests" by which he "expect[ed] to have a recommended single formula" within 3-4 weeks, thus evidencing that

food wraps formed by blowing sheets or films within the scope of the invention had been manufactured at least as early as July 2, 2000. Hodson Declaration, ¶ 9

A patent application filed shortly thereafter on August 23, 2000 as U.S. application Serial No. 09/648,471 ("471 Application) disclosed and claimed a blend of biodegradable polymers and fillers, as well as sheets and films suitable for use in making food wraps similar or identical to blends and wraps disclosed and claimed in the Subject Application. Hodson Declaration, ¶ 10. The '471 Application ultimately issued as U.S. Patent No. 6,573,340 ("340 Patent") on June 3, 2003, more than a year after the filing date of the Subject Application, and currently names the same inventors as the Subject Application, as indicated by a Certificate of Correction issued by the USPTO on November 11, 2003. Hodson Declaration, ¶ 11. A copy of the '340 patent (including the Certificate of Correction) is attached to the Hodson Declaration as Exhibit B. The '340 patent is evidence of the many concepts that were either reduced to practice (*e.g.*, contained in working examples expressed in the past tense) or at least constructively reduced to practice (everything in the application). MPEP § 2138.05 (filed applications constitute a "constructive reduction to practice" of all they disclose).

The filing date of the '471 Application (August 23, 2000) is prior to the earliest possible effective filing dates of both Tsai et al. (December 28, 2000) and Schiffer et al. (December 7, 2000)<sup>1</sup>. Thus, everything contained in the '471 Application may be relied upon to establish a reduction to practice prior to the filing dates of Tsai et al. and Schiffer et al. *See* MPEP 2138.05. The '471 Application disclosed, among other things, the use of inorganic particulate fillers having a particle size up to about 2 mm and a concentration up to 90% by volume or 95% by weight in order to impart desired properties, including "dead-fold" (*i.e.*, the tendency of a food wrap to retain a fold or crease rather than spontaneously unfolding like many plastic sheets or films). Hodson Declaration, ¶ 14 (citing the '340 Patent, col. 14, lines 40-43; col. 15, lines 50-60; col. 16, lines 13-17).

Examples 4-12 of the '471 Application are drafted in the past tense and therefore describe embodiments that were reduced to practice at least as early as August 23, 2000. These examples included a biodegradable polymer and various quantities of one or more inorganic particulate fillers, with Examples 6-12 expressly stating that the extruded films made therein had excellent

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<sup>1</sup> Applicants have not reviewed the contents of the provisional application from which Schiffer et al. claims priority and therefore do not admit that Schiffer et al. is, in fact, entitled to a filing date of December 7, 2000.

dead-fold properties, which resulted at least in part from the inclusion of the particulate fillers. Hodson Declaration, ¶ 15 (citing the '340 patent, col. 21, lines 63-64; col. 22, lines 17, 36-38, 59; col. 23, lines 3-5, 25-31, 44-45, 48-49). Accordingly, the property of "dead-fold" was clearly reduced to practice by Applicants at least as early as August 23, 2000.

Moreover, the films of Examples 4-12 were blown using either a Gemini film blowing extruder (at the Gemini plant referred to in the July 2, 2000 email) or a proprietary extrusion/film blowing apparatus owned by Biotec. Hodson Declaration, ¶ 16 (citing the '340 patent, col. 21, lines 66-67; col. 22, lines 26-29; col. 23, lines 1-3, 39-42). Simon Hodson personally inspected one or more of these films and found that the film blowing apparatus employed in Examples 4-12 stretched the films while in a softened state, yielding films having cavitation and therefore especially suitable as food wraps (*e.g.*, the cavitation produced by the blowing process provided the food wraps with good breathability, which assisted in reducing moisture condensation when wrapping hot, steamy food items). Hodson Declaration, ¶ 17. Mr. Hodson also found that stretching the films of Examples 4-12 yielded films in which in a portion of the filler particles protruded from the surface, thus yielding films having a roughened, paper-like feel rather than the smooth feel of plastic sheets. Hodson Declaration, ¶ 18. Accordingly, sheets or films having cavitation and also filler particles that protrude from the surface were reduced to practice at least as early as August 23, 2000.

The '471 Application also taught the concept of texturing a film or sheet using knurled or other embossing-type rollers in order to improve its "bulk hand feel" and make it seem more like paper than plastic. Hodson Declaration, ¶ 19 (citing the '340 patent, col. 4, line 66 – col. 5, line 9). The '471 Application therefore constitutes a constructive reduction to practice as of August 23, 2000 of "texturing" as claimed in the Subject Application.

After working to manufacture and test the extruded films referred to in the July 2, 2000 e-mail and the '471 Application filed August 23, 2000, the inventors continued to diligently prepare and test various biodegradable polymer and filler blends on an ongoing basis leading up to the filing of the Subject Application on March 1, 2002 in order to *optimize* sheets and films for use as food wraps, as evidenced by a series of email communications dated between February 25, 2001 and October 16, 2001, copies of which are attached hereto as Exhibits C-G. Hodson Declaration, ¶ 20.

The e-mail of February 25, 2001 (Exhibit C of Hodson Declaration) discusses "paper-like tissue, 30 micron", which refers to polymer films made according to the July 2, 2000 email and/or the '471 Application that included particulate fillers, that were stretched using the blowing apparatus referred to in the '471 Application and the July 2, 2000 email, and that had filler particles that protruded from the surface of the film in order to create a roughened and/or porous surface that gave the film the look and feel of paper-like tissue. Hodson Declaration, ¶ 21; Exh. C, p. 3. The e-mail of April 6, 2001 (Exhibit D of Hodson Declaration) includes extensive economic modeling of the wrap technology, which further evidences diligence leading up to the filing of the Subject Application. Hodson Declaration, ¶ 22; Exh. D, pp. 2-20. The e-mail of June 22, 2001 (Exhibit E of Hodson Declaration) discusses "previous wrap trials" that were performed on actual filled polymer sheets, which is further evidence of the extent to which the wrap technology had been developed and tested prior to this date. Hodson Declaration, ¶ 23; Exh. E, p. 1. The e-mail of August 31, 2001 (Exhibit F of Hodson Declaration) shows that extensive testing relating to various properties for the wraps developed as early as the July 2, 2000 email and/or the '471 Application was performed and that, although the wraps breathed less than paper wraps, they did breath nevertheless, which shows that the films included significant cavitation as a result of stretching during film blowing. Hodson Declaration, ¶ 24; Exh. F, pp.1-2. The e-mail of October 16, 2001 (Exhibit G of Hodson Declaration) refers to a filled polymer film wrap that included 35% filler, further evidencing diligence leading up to the filing of the Subject Application on March 1, 2002. Hodson Declaration, ¶¶ 25-26.

As evidenced by the Hodson Declaration and the documentary evidence attached thereto, as further explained and clarified by the Hodson Declaration, Applicants submit that the subject matter of at least claims 1-13 and 15-35 was invented prior to December 7, 2000, and at least as early as the filing date of the '471 Application on August 23, 2000 and/or the July 2, 2000 email. See Hodson Declaration, ¶ 27. As explained in the MPEP,

[W]hen reviewing a 37 C.F.R. 1.131 affidavit or declaration, the examiner must consider all of the evidence presented in its entirety, including the affidavits or declarations and all accompanying exhibits, records and "notes." An accompanying exhibit need not support all claimed limitations, provided that any missing limitation is supported by the declaration itself. *Ex parte Ovshinsky*, 10 USPQ2d 1075 (Bd. Pat. App & Inter. 1989).

MPEP § 715.07 (emphasis added). Therefore, when determining the sufficiency of the Hodson Declaration, the PTO must look at the evidence “in its entirety”, including both the declaration itself and everything contained in the accompanying exhibits. Thus, the entire disclosure of the ’340 patent (Exhibit B to Hodson Declaration) must be considered when determining what was reduced to practice at least as early as August 23, 2000. Moreover, any claim limitations not explicitly set forth in the attached exhibits can be provided by the Hodson Declaration itself.

As clearly explained in the Hodson Declaration, relying on the evidentiary documents attached thereto as Exhibits A-G, each and every feature of claims 1-13 and 15-35 (including, e.g., cavitation, texturing and dead fold) were reduced to practice at least as early as August 23, 2002 and/or July 2, 2000. Accordingly, because all of the rejections of claims 1-13 and 15-35 are based at least on part on either Tsai et al. or Schiffer et al., but because the subject matter of these claims was reduced to practice prior to December 7, 2000<sup>2</sup>, Applicants respectfully request reconsideration and allowance of at least claims 1-13 and 15-35 based on the fact that Tsai et al. and Schiffer et al. are not recognizable as prior art under 35 U.S.C. § 102(e) relative to these claims.

**III. NONE OF THE CITED REFERENCES TEACH OR SUGGEST "THERMOPLASTIC STARCH THAT IS FREE OF PLASTICIZERS" AS RECITED IN CLAIMS 14 AND 39-41, NOR DOES THE OFFICE ACTION EVEN ALLEGE THAT THEY DO**

Claims 14 and 39-41 each recite the inclusion of “thermoplastic starch that is free of plasticizers”. None of the cited references teach or suggest compositions, films or sheets containing “thermoplastic starch that is free of plasticizers”. More fundamentally, neither the current Office Action nor any previous Office Action even alleges that any cited reference discloses “thermoplastic starch that is free of plasticizers”. Thus, the Office Action fails to state a *prima facie* obviousness rejection relative to claims 14 and 39-41. On this basis alone, Applicants respectfully request reconsideration and allowance of claims 14 and 39-41.

Moreover, Applicants further refer to the Hodson Declaration, which is further evidence that Lorcks et al. neither teaches nor suggests “thermoplastic starch that is free of plasticizers”. See Hodson Declaration, ¶ 28. Lorcks et al. teaches that the “thermoplastic starch” disclosed therein is made according to PCT/WO90/05161, which corresponds to U.S. Patent No.

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<sup>2</sup> Applicants also submit that the subject matter of at least claims 1-13 and 15-35 was at least conceived of prior to December 7, 2000, followed by diligence leading up to the filing date of the Subject Application.

5,362,777, and which includes a substantial quantity of a *plasticizer* such as glycerin, typically 10%-40% by combined weight of the starch and plasticizer. Lorcks et al., col. 1, line 62 – col. 2, line 6. The teachings of Tomka are relevant to understanding what type of thermoplastic starch is disclosed in Lorcks et al.

U.S. Patent No. 5,362,777 to Tomka discloses “thermoplastically processable starch” (“TPS”) that is “substantially water free”. Hodson Declaration, ¶ 30 (citing Tomka, col. 13, line 2; col. 14, line 40). Tomka teaches that water (*e.g.*, the natural water content of starch) can be replaced with one or more plasticizers such as glycerin to lower the melting temperature of starch to below its decomposition temperature. Hodson Declaration, ¶ 31 (citing Tomka, col. 13, lines 1-8). Such plasticizers solved the problem of the high volatility of water during processing because they have a vapor pressure of less than 1 bar at the melting temperature of the thermoplastic starch composition. Tomka at col. 13, lines 10-12. Tomka discloses and claims thermoplastic starch compositions in which the high boiling liquid plasticizer or “additive” is included in an amount of at least 5% by combined weight of the starch and additive, with 10-30% being preferred. Tomka at col. 6, lines 54-59; col. 13, lines 3-6. Tomka further teaches:

Depending on the properties desired for the shaped body to be produced, such as thermal and mechanical properties in particular, about 10 to 35% plasticizer or additive respectively is preferably added to the native starch, the water of the starch being replaced by the addition of the additives or removed by drying.

*Id.* at col. 6, lines 54-59 (emphasis added).

In contrast to Lorcks et al. and Tomka, the Subject Application teaches that native starch granules can be initially melted using water, which is then removed by evaporation after the starch melt has been blended with one or more synthetic biodegradable polymers:

Preferred thermoplastic starch polymers for use in making food wraps may advantageously utilize the natural water content of native starch granules to initially break down the granular structure and melt the native starch. Thereafter, the melted starch can be blended with one or more synthetic biopolymers, and the mixture dried by venting, in order to yield a final polymer blend.

Hodson Declaration, ¶ 33 (citing Subject Application, pp. 9-10, ¶ [0023] and pp. 33-34, ¶¶ [0092]-[0094]). Lorcks et al. does not disclose thermoplastic starch manufactured in this manner but teaches the use of TPS that includes 10-40% of a high boiling liquid plasticizer:

Because of the poor suitability of native starch as an “engineering plastic” it is proposed according to the invention to use so-called thermoplastic starch, as is proposed, for example, in PCT/WO90/05161. This thermoplastic starch is obtained by processing native starch in the melt, by means of a plasticizing or swelling agent, to a homogeneous mass, where the proportion of swelling or plasticizing agent can as a rule amount to between 10 and about 40%, based on the overall weight of the mixture.

Lorcks et al., col. 1, line 62 – col. 2, line 6 (emphasis added); *see* Hodson Declaration, ¶ 34

It is the opinion of Simon K. Hodson, one of the inventors of the subject application, that thermoplastic starch “free of plasticizers” cannot be obtained following the teachings of Lorcks et al. Hodson Declaration, ¶ 35. Thus, Applicants believe that claims 14 and 39-41, because they recite “thermoplastic starch that is free of plasticizers”, are patentable over Lorcks et al., either alone or in combination with any other art of record.

In view of the foregoing, Applicants believe the claims are in allowable form. In the event there remains any other impediment to the prompt allowance of this application, which could be clarified by a telephonic interview or overcome by Examiner amendment, the Examiner is requested to initiate a telephonic interview with the undersigned attorney.

Dated this 17<sup>th</sup> day of January 2006.

Respectfully submitted,

  
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